

2SJ358C

R07DS1262EJ0300

Rev.3.00

P-CHANNEL MOSFET FOR SWITCHING

Aug 17, 2015

Description

The 2SJ358C, P-channel vertical type MOSFET designed for general-purpose switch, is a device which can be driven directly by a 4.0 V power source.

Features

- Directly driven by a 4.0 V power source.
- Low on-state resistance
 - $R_{DS(on)1} = 143 \text{ m}\Omega \text{ MAX. (} V_{GS} = -10 \text{ V, } I_D = -2.0 \text{ A)}$
 - $R_{DS(on)2} = 179 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.5 \text{ V, } I_D = -2.0 \text{ A)}$
 - $R_{DS(on)3} = 190 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.0 \text{ V, } I_D = -2.0 \text{ A)}$

Ordering Information

Part Number	Lead Plating	Packing	Package
2SJ358C-T1-AZ/AY	-AZ : Sn-Bi , -AY : Pure Sn	1000p/Reel	SC-84 (MP-2)

Remark "-AZ/AY" indicates Pb-free. This product does not contain Pb in external electrode and other parts.

Marking XT1

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	-60	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 20	V
Drain Current (DC)	$I_{D(DC)}$	± 3.5	A
Drain Current (pulse) ^{Note1}	$I_{D(pulse)}$	± 14	A
Total Power Dissipation ^{Note2}	P_T	2.0	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Note1 $PW \leq 10 \mu\text{s}$, Duty Cycle $\leq 1\%$

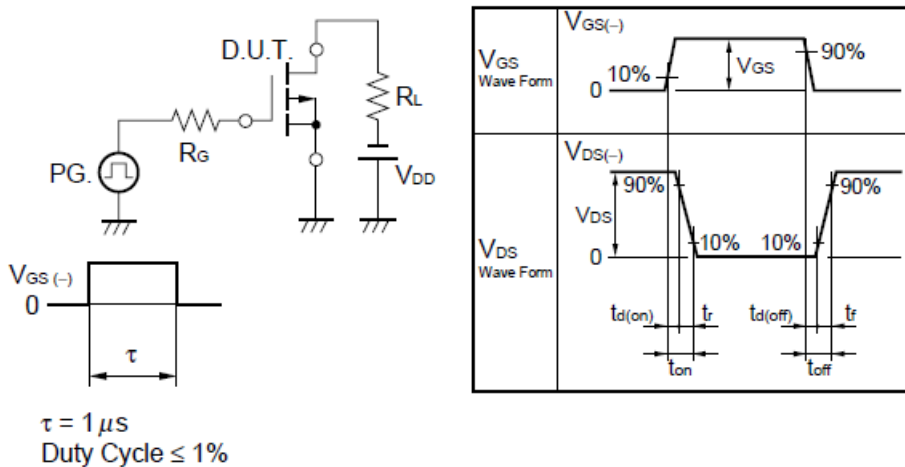
Note2 $16 \text{ cm}^2 \times 0.7\text{mm}$, ceramic substrate used

Electrical Characteristics (TA = 25°C)

Characteristics	Symbol	Test Conditions	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -60\text{ V}, V_{GS} = 0\text{ V}$			-1.0	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$			∓ 10	μA
Gate to Source Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = -10\text{ V}, I_D = -1\text{ mA}$	-1.5	-1.9	-2.5	V
Forward Transfer Admittance Note	$ y_{fs} $	$V_{DS} = -10\text{ V}, I_D = -2.0\text{ A}$	3.0	6.2		S
Drain to Source On-state Resistance Note	$R_{DS(on)1}$	$V_{GS} = -10\text{ V}, I_D = -2.0\text{ A}$		114	143	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = -4.5\text{ V}, I_D = -2.0\text{ A}$		134	179	$\text{m}\Omega$
	$R_{DS(on)3}$	$V_{GS} = -4.0\text{ V}, I_D = -2.0\text{ A}$		142	190	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS} = -10\text{ V},$ $V_{GS} = 0\text{ V},$		666		pF
Output Capacitance	C_{oss}	$f = 1.0\text{ MHz}$		120		pF
Reverse Transfer Capacitance	C_{rss}			58		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -30\text{ V},$ $I_D = -2\text{ A},$		12		ns
Rise Time	t_r	$V_{GS} = -10\text{ V},$		5		ns
Turn-off Delay Time	$t_{d(off)}$	$R_G = 10\ \Omega$		58		ns
Fall Time	t_f			27		ns
Total Gate Charge	Q_G	$I_D = -3.5\text{ A}, V_{DD} = -48\text{ V}, V_{GS} = -10\text{ V}$		12		nC
Body Diode Forward Voltage Note	$V_{F(S-D)}$	$I_F = 3.5\text{ A}, V_{GS} = 0\text{ V}$		0.87		V

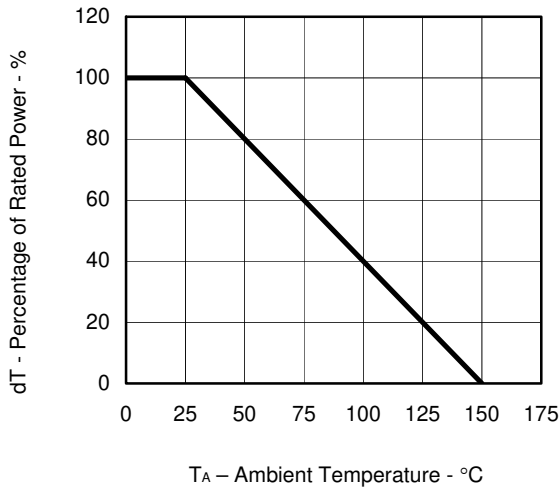
Note Pulsed

Test Circuit Switching Time

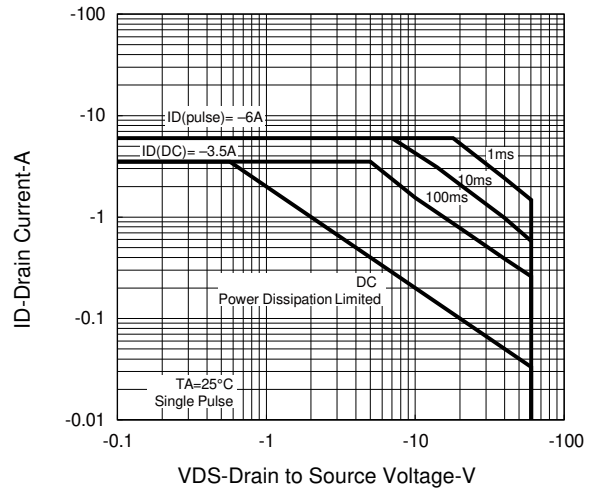


Typical Characteristics (TA = 25°C)

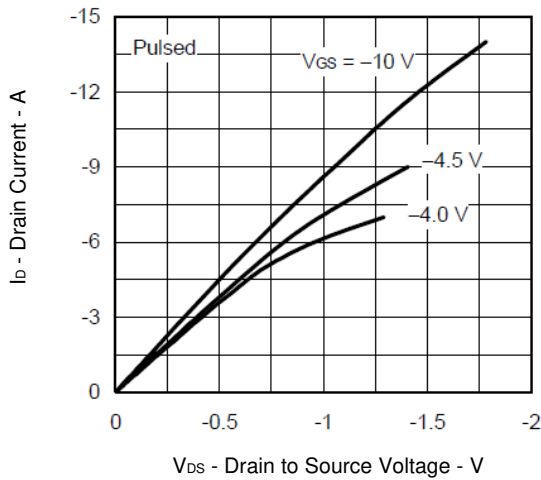
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



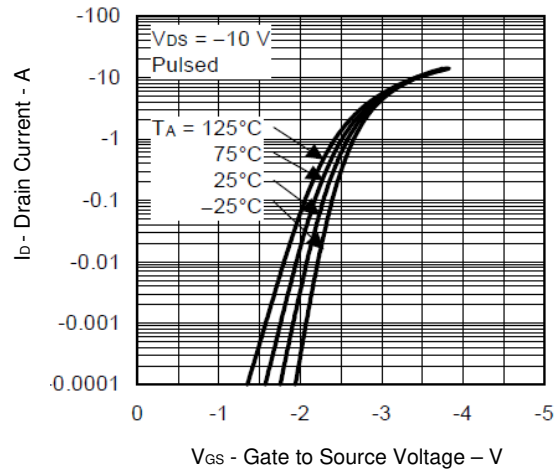
FORWARD BIAS SAFE OPERATING AREA



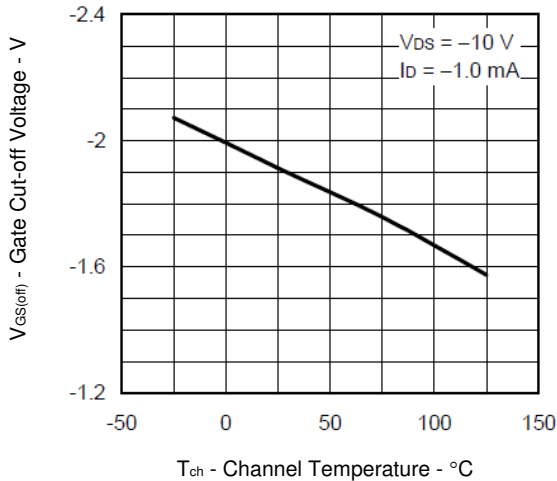
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



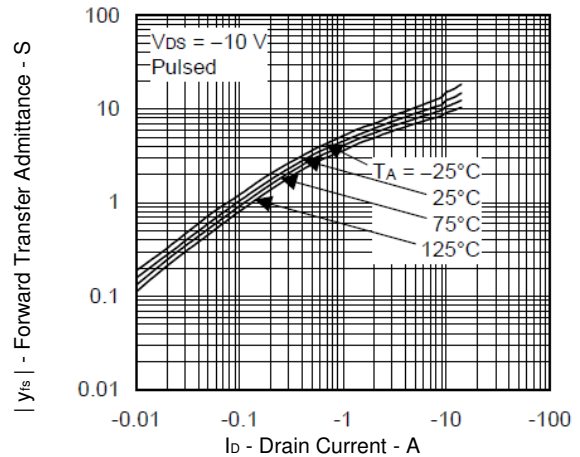
FORWARD TRANSFER CHARACTERISTICS



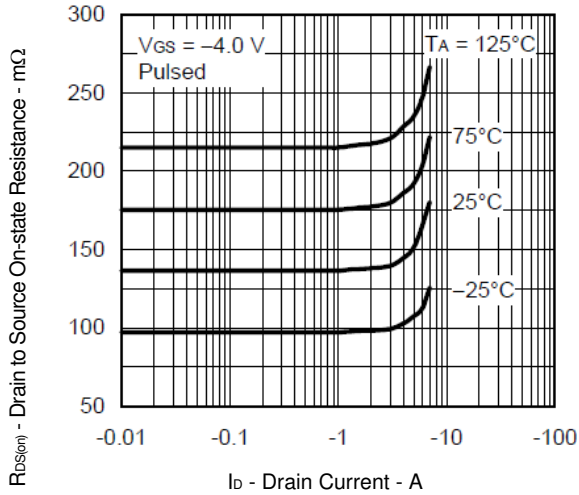
GATE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



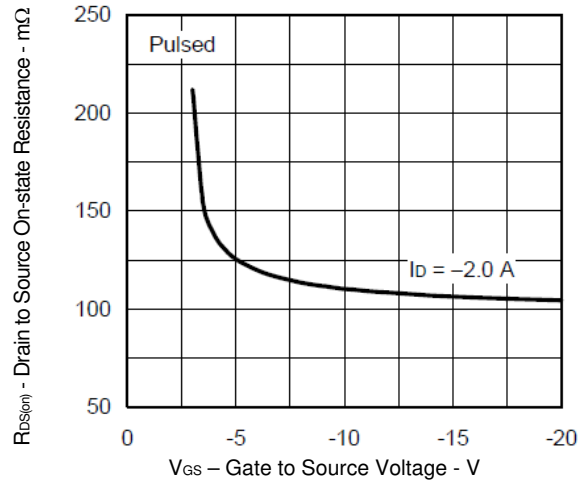
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



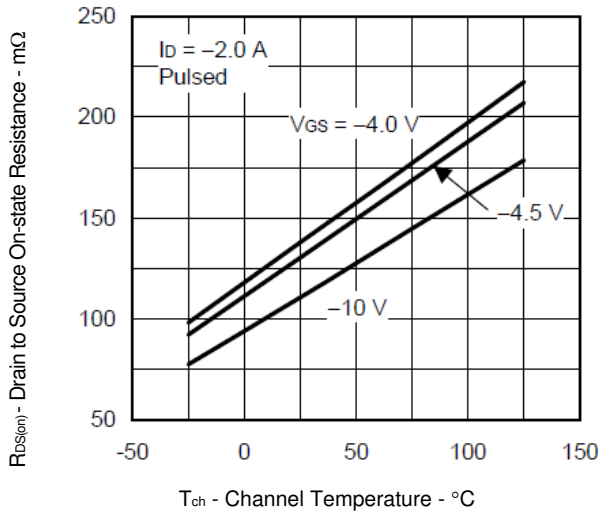
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



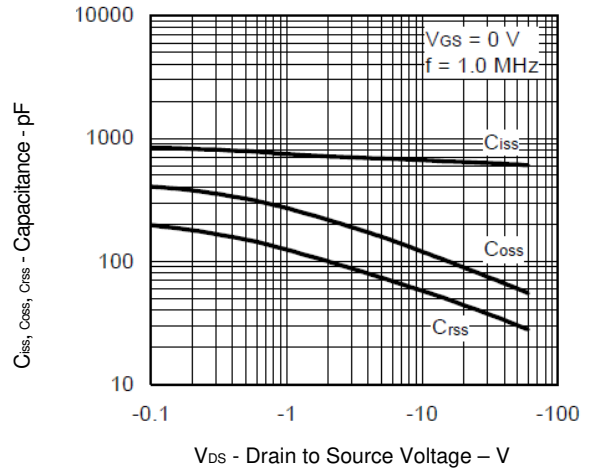
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



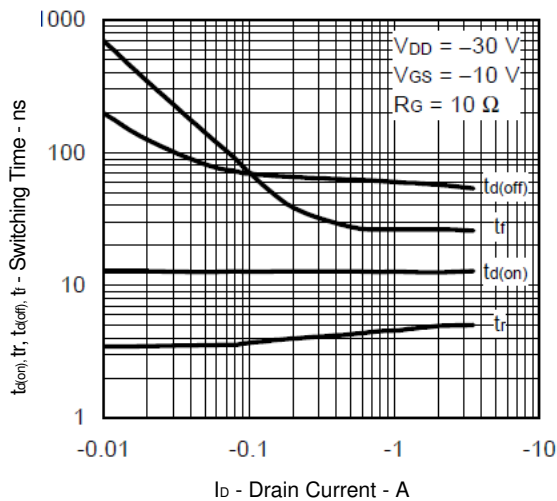
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



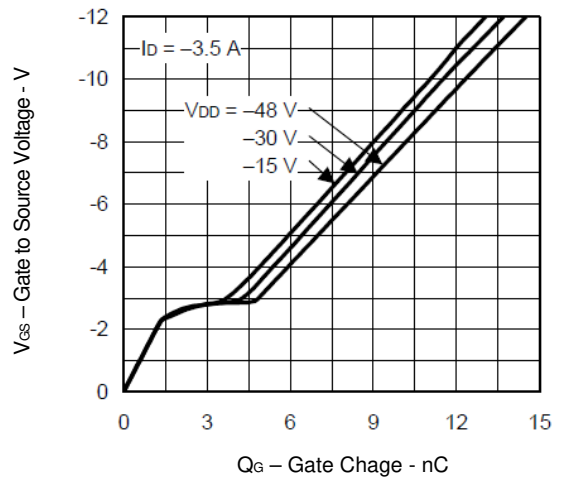
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



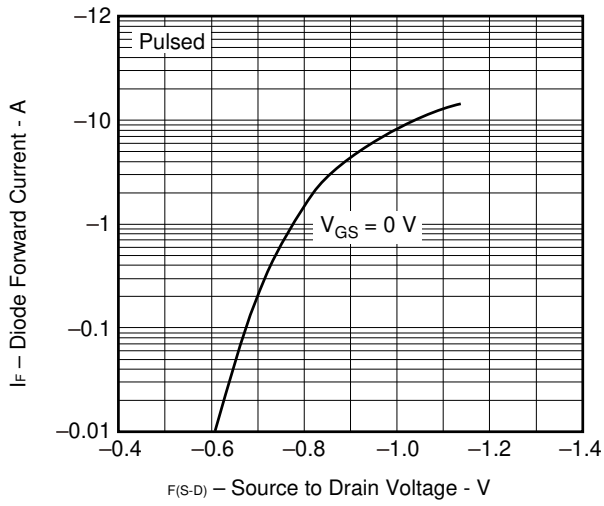
SWITCHING CHARACTERISTICS



DYNAMIC INPUT CHARACTERISTICS

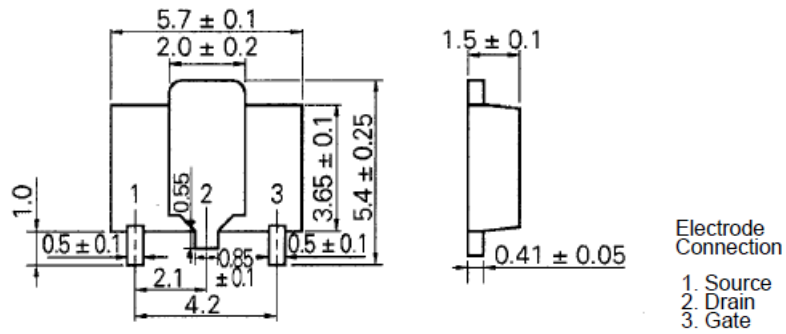


SOURCE TO DRAIN DIODE FORWARD VOLTAGE

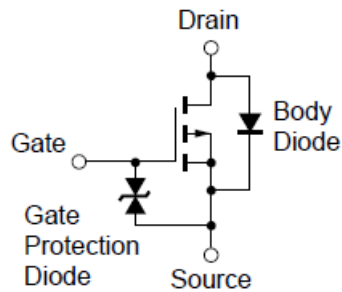


Package Drawings (Unit: mm)

SC-84 (MP-2)



Equivalent Circuit



Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

	2SJ358C
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Rev.	Date	Description	
		Page	Summary
1.00	Sep , 2013	-	First Edition Issued
1.10	Nov , 2013	2	Test Circuit
2.00	Jun, 2015	3	Added FORWARD BIAS SAFE OPERATING AREA
3.00	Aug , 2015	3	Changed FORWARD BIAS SAFE OPERATING AREA
		5	Changed SOURCE TO DRAIN DIODE FORWARD VOLTAGE

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